CLAIMS

1. A system for designing custom cutting bit profiles for use in machining a cylinder engine head, the system comprising:

a bit-design software program having means for creating, modifying, and storing specifications of the custom cutting bit profiles;

a customer computer for executing the bit-design software program;

a bit manufacturer computer; and

a transfer medium for transferring the specifications from the customer computer to the bit manufacturer computer.

2. The system of claim 1, wherein the transfer medium is a removable memory device.

3. The system of claim 1, wherein the transfer medium is electronic mail.

4. The system of claim 1, wherein the transfer medium is an Internet connection.

5. A software design program for creating a diagram and specifications for a cutting tip profile for use in manufacturing a custom cutting tip utilized in a machining apparatus for machining a valve seat of a cylinder engine head, the software design program comprising:

an active work area for displaying the diagram;

a tool box window for creating and modifying the cutting tip profile of the diagram, the tool box window further comprising:

a creation window having means for specifying a plurality of segments, the plurality of segments forming the cutting tip profile;

an elastics window having means for modifying an elastic segment of the plurality of segments; and

a blank tips window for displaying a plurality of available blank template bits;

wherein the software design program automatically overlays the cutting tip profile on a selected blank template bit of the plurality of available blank template bits.

6. The software design program of claim 5, wherein the segment is a line segment defined by an angle and one of a length and a change along an axis.

7. The software design program of claim 5, wherein the segment is an arc segment defined by a start tangent, a stop tangent and a radius.

8. The software design program of claim 5, further comprising a calculator for determining the positioning of a tip holder of the machining apparatus from a plurality of position values, the tip holder for holding the custom cutting tip.

9. The software design program of claim 8, wherein the plurality of position values comprises a valve diameter value, a pilot diameter value, and a margin value.

10. The software design program of claim 5, wherein the elastics window further comprises a passive segment option for adding a passive segment to the profile, the passive segment for automatically extending the cutting tip profile to a maximum permitted height of the selected blank template bit.

11. The software design program of claim 5, further comprising a print option for printing the diagram.

12. The software design program of claim 11, wherein the diagram is printed in a blue-print format.

13. A method of designing a custom bit for machining a valve seat of a cylinder engine head, the method comprising the steps of:

selecting a template tip from a plurality of template tips;

specifying a plurality of segments;

overlaying the plurality of segments on the template tip to create a representation of the custom bit; and

sending the representation to a bit manufacturer.

14. The method of claim13, wherein the step of selecting a template tip comprises the step of selecting a profile from a database of profiles, each profile of the database of profiles having a predetermined plurality of segments, and wherein the step of specifying a plurality of segments comprises the step of modifying the predetermined plurality of segments.

15. A tip holder adjustment calculator for calculating a positioning of a tip holder on a tool holder of a machining apparatus for machining valve seats of a cylinder engine head, the tip holder adjustment calculator utilizing values derived from the valve seats and a valve for placement in the valve seat, the calculator comprising:

a first entry point for entering a valve diameter of the valve;

a second entry point for entering a pilot diameter of the valve; and

a third entry point for entering a margin between a valve seat contact and the valve seat; and

a tip measurement area for displaying the positioning of the tip holder;

wherein the positioning is calculated from the valve diameter, the pilot diameter, and the margin, and wherein the positioning defines a distance between a machining head pilot and the tip holder.

16. A method of doing business between a tip manufacturer and a customer for creating a custom tip for use in machining engine cylinder heads, the method comprising the steps of:

supplying an automated tip profile design program to the customer;

creating a custom tip utilizing the automated tip profile design program, wherein the customer performs a design procedure to create the custom tip, the design procedure comprising the steps of:

selecting a blank profile;

specifying at least one profile segment; and

saving the custom tip in a tip file; and

delivering the tip file to the tip manufacturer.

17. The method of doing business of claim 16, wherein the step of delivering the tip file comprises the step of uploading the tip file to the tip manufacturer utilizing an electronic means.

18. The method of doing business of claim 16, wherein the step of supplying an automated tip profile design program comprises the step of downloading the automated tip profile design program to the customer utilizing an electronic means.